* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The map database which memorizes map data, and an alphabetic character data storage means to make two or more language correspond and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database It is navigation equipment characterized by having the display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, and a coincidence display with two or more language being possible for said display means in a graphic character.
[Claim 2] A manual scrolling means to scroll the map display screen displayed by said display means in equipment according to claim 1 based on manual input, In the time of a split-screen display divide the display screen by said display means, have a split-screen display means to perform a map display to each split screen, and according to said split-screen display means When the language of the graphic character of each screen differs, manual input by said manual scrolling means becomes effective to two or more split screens. When display language is the same Manual input by said manual scrolling means is navigation equipment characterized by having the manual scrolling screen allocation control means controlled to become effective only in one side of a split screen.
[Claim 3] The map database which memorizes map data, and an alphabetic character data storage means to make two or more language correspond and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database The display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, When it approaches during path guidance at a predetermined crossing Navigation equipment which has a crossing enlarged drawing display means to display the enlarged drawing of the crossing, and is characterized by carrying out character representation to a crossing enlarged drawing with the language corresponding to a its present location irrespective of the map display language till then.
[Claim 4] A voice data storage means to memorize the data for voice guidance about the name of a place in equipment according to claim 3 corresponding to two or more language, A voice guidance means to read the data about the name of a place memorized by the voice data storage means, and to perform voice guidance when a predetermined crossing is approached, It is navigation equipment which has in a pan and is characterized by carrying out character representation of said crossing enlarged drawing display means to a crossing enlarged drawing in the language corresponding to a its present location irrespective of the spoken language for voice guidance.

[Claim 5] Navigation equipment characterized by setting the language of the voice guidance performed with said voice guidance means when the language corresponding to the alphabetic data and the its present location for a display which were chosen by the graphic-character language selection means is the same as the same language in equipment according to claim 4.
[Claim 6] It is the medium which recorded the navigation program to which a map and character representation are made to carry out on navigation equipment. Map data are made to read from the map database which memorizes map data. From an alphabetic character data storage means to make a map display carry out to a display means based on the read map data, and to memorize the alphabetic data corresponding to two or more language As language which was made to read the alphabetic data of the preselected language from an alphabetic character data storage means, and was made to carry out character representation on said display map, and was chosen beforehand The medium which recorded the navigation program characterized by being able to adopt at least two language, the language according to a its present location, and the language specified by a user, and enabling the coincidence display of said graphic character in two or more language.
[Claim 7] In a medium according to claim 6 in a split-screen display When the map display screen is divided and displayed on two or more screens, it is the case of this split-screen display and the language of the graphic character of each screen differs The medium which recorded the navigation program which coincidence scrolling of two or more split screens is carried out according to actuation of a user, is a split-screen display, and is characterized by scrolling only one side of a split screen according to actuation of a user when the display language of each screen is the same.
[Claim 8] It is the medium which recorded the navigation program to which a map and character representation are made to carry out on navigation equipment. Map data are made to read from the map database which memorizes map data. From an alphabetic character data storage means to make a map display carry out to a display means based on the read map data, and to memorize the alphabetic data corresponding to two or more language When the alphabetic data of the preselected language is made to read from an alphabetic character data storage means, character representation is carried out on said display map and it approaches during path guidance at a predetermined crossing The medium which was made to display the enlarged drawing of that crossing and recorded the navigation program characterized by carrying out character representation with the language corresponding to a its present location irrespective of the map display language till then on the crossing enlarged drawing of a parenthesis.
[Claim 9] The medium which recorded the navigation program which is a medium according to claim 8 and is characterized by making voice guidance perform based on the voice data which was made to read the voice data about the name of a place, and was read when a further predetermined crossing is approached, and making character representation perform in a crossing enlarged drawing in the language corresponding to a its present location irrespective of the spoken language for voice guidance.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] It is related with the medium which recorded the navigation program used in the navigation equipment which can perform a display with two or more language etc., and this navigation equipment.
[0002]
[Description of the Prior Art] The navigation equipment which is carried in mobiles, such as a car, and performs path guidance conventionally is known. With this navigation equipment, it has current District Public Prosecutor's Office appearance means, such as GPS (global positioning system) equipment, a map database, and a display, and the map display of the their present location circumference and the display of a their present location mark are performed on a display. Furthermore, with many navigation equipments, it has the routing function. That is, in navigation equipment, an input of the destination carries out operation calculation of the optimal path to there. And in the transit which set up the path, an intersectional enlarged drawing, an intersectional travelling direction, etc. are displayed, and path guidance to a driver is performed in a part to be shown around, such as a crossing which carries out a right and left chip box. Furthermore, the navigation equipment which performs voice guidance is also known and directions of the right and left chip box in the next crossing etc. are outputted with voice before the crossing to show.
[0003] Here, it is user-unfriendly when using a car in the area where the language of a large number, such as Europe, is used, and only single language can be used. Then, it is necessary to correspond to two or more language.
[0004] With the navigation equipment of a publication, the language used is changed to JP,4-102014,A according to the present location of a car. By this, when the border is crossed, the language used can be changed to local language.
[0005]
[Problem(s) to be Solved by the Invention] However, when the border is crossed, changing to local language is not necessarily desirable. For example, in voice guidance having been changed to local language just because it crossed the border, when a user was able to understand only a native language, an understanding is impossible. Moreover, when a display also changes to local language, it is rather unclear in many cases.
[0006] Moreover, in navigation equipment, a screen is divided into two or more screens, and the system which enables it to provide a user with much information is also known. Although it was thought that correspondence to many languages was made to a thing more intelligible for a user when such a system was used, examination was not made about such a point.
[0007] This invention is made in view of the above-mentioned technical problem, and aims at offering the medium which recorded the navigation program used in the navigation equipment which can perform a display intelligible for a user etc., and this navigation equipment corresponding to use of two or more language.
[0008]
[Means for Solving the Problem] An alphabetic character data storage means to make this invention correspond to the map database which memorizes map data, and two or more language, and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database It has the display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, and said display means is characterized by a coincidence display with two or more language being possible in a graphic character. Thus, the thing of two or more language can be written together as a graphic

character. Therefore, the display of both local language and a native language etc. can be performed, and a user can see both the expression of the same local language as the display in a road etc., and the expression of a native language intelligible for a user.

[0009] Moreover, a manual scrolling means to scroll the map display screen where this invention was displayed by said display means based on manual input, In the time of a split-screen display divide the display screen by said display means, have a split-screen display means to perform a map display to each split screen, and according to said split-screen display means When the language of the graphic character of each screen differs, manual input by said manual scrolling means becomes effective to two or more split screens. When display language is the same Manual input by said manual scrolling means is characterized by having the manual scrolling screen allocation control means controlled to become effective only in one side of a split screen. For example, when the native languages of those who have got into [a driver's seat and a passenger seat], respectively differ, it is suitable to set it as that from which language differs in two screens. Moreover, when a driver wants to see both local language and a native language, it is good to see this with a split screen. In such a case, in two screens, it is the purpose to change language and it is thought that he wants, as for a map, to see the same thing. Then, by scrolling actuation to one screen, by scrolling both screens to coincidence, two screens can be made the display of the same area and scrolling in alignment with a demand of a user can be performed. Moreover, when two screens are the same language, it is hard to be thought that he wants to see the two same things. Therefore, scrolling which suited the demand of a user can be performed by making scrolling individual.

[0010] Moreover, an alphabetic character data storage means to make this invention correspond to the map database which memorizes map data, and two or more language, and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database The display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, When it approaches during path guidance at a predetermined crossing, it has a crossing enlarged drawing display means to display the enlarged drawing of the crossing, and is characterized by carrying out character representation to a crossing enlarged drawing with the language corresponding to a its present location irrespective of the map display language till then.

[0011] Thus, local language is displayed on a crossing enlarged drawing. It is suitable for a crossing enlarged drawing that the building, signboard, etc. of a spot are shown. The building and signboard which actually exist are written in local language. Moreover, the display prepared in the road side is also written in local language. Then, by the display of local language, the display of a crossing enlarged drawing with the display in these path road side will be the same thing, and becomes intelligible for a driver.

[0012] Moreover, a voice data storage means to memorize the data for voice guidance concerning [this invention] the name of a place corresponding to two or more language, A voice guidance means to read the data about the name of a place memorized by the voice data storage means, and to perform voice guidance when a predetermined crossing is approached, It has in a pan and said crossing enlarged drawing display means is characterized by carrying out character representation to a crossing enlarged drawing in the language corresponding to a its present location irrespective of the spoken language for voice guidance. Although the local language of a display is better, it is not easy for a driver to catch this as voice guidance is local language. Guidance intelligible for a driver can be performed by giving guidance voice into a native language and giving an indication local language.

[0013] Moreover, this invention is characterized by setting the language of the voice guidance performed with said voice guidance means as the same language, when the language corresponding to the alphabetic data and the its present location for a display which were chosen by the graphic-character language selection means is the same. The time and effort of a setup can be saved by doing in this way.

[0014] Moreover, this invention is characterized by being the medium which recorded the program for making these actuation perform in navigation equipment. Such a program is executed by computer which performs various data processing of navigation equipment. Moreover, a program is memorized and performed by various media, such as ROM and CDROM. Moreover, it is also suitable to load the program memorized by CDROM etc. to RAM of equipment, or to write the program which acquired from the exterior by the communication link in EEPROM.
[0015] The medium which records data, such as the name of a place, the data for a display Moreover, the 1st language group, While constituting from the 2nd language group, the data for voice Said 1st language group, When it constitutes from the 2nd language group and uses the word in the 1st language group corresponding to the specific name of a place, it is suitable that the 1st language group can be accessed also in a display at the 2nd language group so that the word data in the 2nd language group can be used. Furthermore, even when the 1st language group is chosen as data for a display, it is suitable for said data for voice that all of the 1st and 2nd language group can be accessed. Thus, writing together with two or more language, and a display and voice can be outputted in different language by constituting so that the word data of two or more language can be read about one word.
[Embodiment of the Invention] Hereafter, the gestalt (henceforth an operation gestalt) of operation of this invention is explained based on a drawing.
[0016] Drawing 1 is drawing showing the configuration of 1 operation gestalt. The map data of each country set in the map database 10 as the object of guidance are memorized. Especially, this map database 10 also has the data about the border, and data about the language used (in the usual case, he is every country) according to an every place region. In addition, although constituting from CDROM etc. is desirable as for this map database 10, other media, such as DVD, may be used.
[0017] Moreover, the indicative-data storage section 12 has memorized graphic characters, such as a crossing name and the name of a place, corresponding to two or more language. Furthermore, the voice data storage section 14 has memorized voice data including the name of a place required in the case of guidance etc. corresponding to two or more language. In addition, in drawing, although the indicative-data storage section 12 and the voice data storage section 14 were separately indicated to be the map databases 10, it is good also considering these as some map databases 10. That is, it is suitable to memorize a graphic character and the data for [the] reading out together as some map data.
[0018] In addition, the map database 10, the indicative-data storage section 12, and the voice data storage section 14 are made rewritable, required data are acquired by communication link etc., and storing is also suitable. Moreover, the program of a system of operation etc. may be memorized in this map database.
[0019] It is also suitable for GPS equipment 16 to use the DGPS (differential GPS) equipment which goes up precision using the error information which receives the electric wave from a GPS Satellite, detects a its present location as a location absolutely, and is supplied by the FM multiplex broadcast etc. Moreover, it is also relatively suitable to combine the location measurement which detects the signal from the magnetic marker by the autonomous navigation which carries out the migration direction detection from detection values, such as a bearing meter and transit meter, prepared in location measurement, a road-side beacon, and on the street.
[0020] These map database 10, the indicative-data storage section 12, the voice data storage section 14, and GPS equipment 16 are connected to navigation ECU 18. Therefore, navigation ECU 18 always recognizes the its present location as a location on a map. Here, navigation ECU 18 is a computer which has ROM, RAM, CPU, etc., and the fundamental program for the actuation is memorized by ROM. However, it is not necessary to necessarily memorize various programs of operation to ROM, and they may be memorized to external storage. External storage can use various kinds of things, such as CDROM, and a hard disk, EEPROM. Moreover, it is also suitable for a program of operation to acquire by communication link, to memorize inside, or to acquire a version up part by communication link, and to update a program.
[0021] The display 22 is connected to navigation ECU 18 through the display and control section 20. A display 22 is formed in a color LCD (liquid crystal display) etc., and performs a map display, a its

present location display, a name of a place display, etc. according to the data sent from navigation ECU 18. Especially, two or more screens can be displayed on a display 22. For example, it can divide into right-and-left 2 screen, and a different image can be displayed. Such control is performed by changing into the signal for a display and control section 20 displaying the picture signal for two or more screens on reception from navigation ECU 18, and displaying this on a display 22. Moreover, the control unit 24 is also connected to navigation ECU 18. This control unit 24 is a thing for various kinds of data inputs. This control unit 24 contains the touch panel formed in the front face of a display 22, can detect the touch to the carbon button displayed on the display 22, and can input various data.

[0022] Furthermore, the loudspeaker 28 is connected to navigation ECU 18 through the voice output control unit 26. When a loudspeaker 28 is driven based on this, a voice output is performed, when a sound signal is supplied from navigation ECU 18, and voice data is supplied, the voice output control device 26 synthesizes voice, and drives a loudspeaker 28. Here, this voice output control unit 26 supports two or more language, and the guidance voice of the selected language is outputted from a loudspeaker 28.

[0023] Next, actuation of initial setting of this equipment is explained based on drawing 2 . First, a menu screen is displayed on a display 22 (S11). And a user can choose the next processing by touching a display 22. When a user touches the carbon button of a user native language setup, the screen of a user native language setup is displayed (S12). And a user chooses language to set up as a native language on this screen. When this selection finishes, it returns to S11. In addition, navigation ECU 18 memorizes this by performing selection of this native language once. In addition, a setup of this native language is premised on being one in this system. However, it is [as opposed to / in setting up one, respectively **** / one user] good also as a setup of plurality being possible to a multiple user. When a native language is set up to a multiple user, respectively, it is suitable to ask whether there is any modification of a user. Moreover, when two or more native languages are assigned to one user, and local language is in agreement with other setting native languages on the basis of the native language of the highest priority, it is suitable to make it give priority to other native languages.

[0024] In S11, when manual (manual) change mode is chosen, the selection screen of display language is displayed (S13). In this screen, a user can choose display language manually. In addition, you may enable it to choose the native language set up by the default in S13.

[0025] And when selection of this display language is completed, the inquiry screen of whether to carry out a language addition is displayed (S14). When it answers "yes" to an inquiry of this screen, it returns to selection of return display language S13. The selection in this case is additional selection. That is, selection of the 2nd language added to the language once chosen as the eye is performed in these S14. So, with this operation gestalt, language [in / for the display of two or more language / writing together] can be specified. In addition, although one selection is a principle, you may make it additional language write together three or more language by selection of multiple times.

[0026] In S14, when "no" is chosen, the screen of language selection of guidance voice is displayed (S15). And on this screen, the language used for a guidance voice output is chosen, and processing is ended.

[0027] Next, in S11, when automatic change mode is chosen, the selection screen of display language is displayed (S16). In these S16, the language of a their present location and a user's native language become selectable. Here, it opts for the language of a its present location by reading the data about language which correspond from the map database 10 according to the present location recognized according to detection results, such as GPS equipment 16. Moreover, a user's native language is determined by the data set up in S12.

[0028] And in S16, when a user's native language is chosen, it carries out to a display 22 in the language which had the display of having set guidance voice as a user's native language set up (S17), and processing is ended. In addition, it is also desirable to output the same voice from a loudspeaker 28.

[0029] In S16, when the language of a its present location is chosen, the setting screen of guidance voice is displayed (S18). On this screen, "a display word's being interlocked with" and "a user's native language" are selectable. Here, if it chooses "a display word is interlocked with", it will become the

language with which guidance voice is also used in the same present location as a display. On the other hand, if "a user's native language" is chosen, unlike a display word, a native language can be set up about a voice output. Although a display word is automatically changed into local language when it drives across the border by this, guidance voice will be outputted with a native language.
[0030] In addition, in the above processings, when language is set up, it is desirable to display the contents of a setting, or to carry out a voice output, and to enable it to check the contents of a setting in a user in the language then set up.
[0031] Here, display language is explained based on drawing 3 . For example, in Japan, if the language of a spot is chosen by automatic change while the user whose native language is English is operating, as shown in drawing 3 (A), a Japanese display will be performed about the name of a place etc. Moreover, if a native language is set up, an English display will be performed as shown in drawing 3 (B).
[0032] on the other hand -- S of drawing 2 -- in 14 and 13, if English which is a mother country is added to local language, as shown in drawing 3 (C), both will be written together.
[0033] Drawing 3 (C) may be displayed by preparing alternative called local language + user language writing together, and choosing this in automatic change mode, in drawing 2 , here. In this case, when transit is continued across the border, only local language is changed automatically and the display of user language becomes remaining as it is.
[0034] Next, the U.S. has shown an example of the crossing [user / whose native language is Japanese] enlarged drawing under operation to drawing 4 . This example is the case where automatic change mode was chosen in S11, the language of a its present location was chosen in S16, and a user's native language is chosen in S18. Especially, in navigation equipment, the path to the destination is set up beforehand and this example shows the case where the crossing (guidance crossing) to which it shows left turn is approached. In this case, navigation ECU 18 is the phase which resulted before [predetermined distance] the guidance crossing, and displays an intersectional enlarged drawing. In drawing, although the superficial display was shown, as for this enlarged drawing, it is desirable that it is also a three-dimensions-display.
[0035] In this display, that language is local language of that country (or area). Various displays, such as a destination display of a road, a building, and a signboard, are usually the local language of the country. And at a crossing, it refers to the display of a road etc. in many cases. Therefore, in the display of a display 22, it is desirable to adopt the same local language as an indicator etc. On the other hand, a driver is harder to understand the language of the country in many cases. Then, only guidance voice is set as a native language by setup of S18. Guidance with voice is made into what it is easy to understand to a driver by this. Therefore, in this example, although a display is English which is local language, voice guidance is performed in Japanese.
[0036] The user whose A language is a native language operates in drawing 5 , and the example which went into B countries across the border with B is shown in it. At this time, a display carries out [having set up the native language and] local language and voice guidance like the case of drawing 4 . Although a display changes to B language at this time, the voice guidance by A language is continued. For example, if the native language is set as French and it drives to Italy, display language will be changed into Italian from French, and guidance voice will become with French.
[0037] The method of the alphabetic character data storage in "the structure of data" next the indicative-data storage section 12, and the voice data storage section 14 is explained. In this example, these data are memorized by the map database 10 together with other map data.
[0038] First, the item of "the language used" is prepared in the header unit of the map data in the map database 10. And the data about the "number of language" and each language are indicated by the item of this "language used." For example, language 1 - Language n occur, language 1 is set as Japanese and language 2 is set to English etc. And the data about the contents of the language, the classification (specification code) of a character code, a recommendation font, etc. are memorized about each language.
[0039] Moreover, about the map and name data division which memorize the name of a place etc., as shown in drawing 6 , the column of a "character string" is prepared with a name attribute, X, Y

coordinate, etc. And as for the column of this character string, the offset pointer of each language (language 1 - language n) of every is indicated after the "character string byte count." This offset pointer shows the storage location of each language. And the "alphabetic character byte count" of each language and the "character string" are shown in the location pinpointed with this offset pointer.

[0040] If the character string is the same in two or more language, it will overlap and it will become unnecessary thus, to have data of an "alphabetic character number" and a "character string" by using an offset pointer. If the character string of language 1 and the character string of language 2 are the same, it will become unnecessary for example, to overlap and have data of an "alphabetic character number" and a "character string" in a language 1 offset pointer and a language 2 offset pointer by indicating the same location. In addition, since there are no data of an "alphabetic character number" and a "character string", one's are [an offset pointer] unnecessary in the case of single language.

[0041] The display of the guidance alphabetic character in the indicative-data storage section 12 and the voice data storage section 14 etc. and storage of reading character-string data are shown in drawing 7 . Thus, both arrange and memorize in the one storage section. The method of storage is the same as that of above-mentioned map data, and has excluded duplication storage using the offset pointer. In addition, in this example, it reads, and to a character string, memorize a phonetic symbol, it is made to synthesize voice based on this, and voice is generated in it. Text data is memorized, and it can also be made to synthesize voice, and sampling voice data is memorized, and, from now on, voice may be generated.

[0042] The configuration of a country and a language table is shown in drawing 8 . Like [of Japan], although a country and language are supported 1 to 1 in many cases, as for each of U.S. or Britain, it is desirable for English to be local language, and for two or more language to be adopted as local language like Canada or Switzerland, and to have the correspondence relation between a country and language in a table.

[0043] Furthermore, it is also required about each country to memorize the data about the border, and one-country Uchi also needs to have data in the language area, when language changes with areas. Unlike the border, the language area is not necessarily clear in many cases. In this case, it is good to make the remarkable range into a border area, to adopt two language as this border area as local language, and to write this together. Moreover, priority can also be given to what was chosen previously, a native language, etc. in this border area. In addition, data, such as these borders, are usually memorized as data of a closed loop.

[0044] "Split-screen display" In this operation gestalt, the split-screen display is further attained in the display 22. For example, as shown in drawing 9 , the coincidence display of right-and-left 2 screen is possible. Screens, such as a map screen (their present location circumference screen), a crossing enlarged drawing, a broader-based display, and all root displays, can be suitably chosen as these two screens, and can usually be displayed on them.

[0045] Here, the same screen can also be expressed as this operation gestalt. That is, as shown in drawing 9 , the same map display is performed on a right-and-left screen, and such language is changed. By this, a user can see a local language display and a native language display to coincidence. For example, the man of a spot and the foreigner are sitting on the driver's seat and the passenger seat, and when both native languages differ, it becomes a display intelligible for both by displaying local language and a foreigner's native language.

[0046] Moreover, in screen rolling in the case of this split-screen display, navigation ECU 18 recognizes the language of each screen, and changes the contents of scrolling. That is, in a right-and-left screen, when the same language is adopted, while was specified and directions of scrolling are confirmed only on a screen. On the other hand, while displaying the language with which two screens differ, both screens are scrolled together. In addition, it is also suitable for such control to limit, when the same area is being displayed by this scale in two screens.

[0047] For example, scrolling is performed by touching the map of the right-and-left upper and lower sides of a screen. Then, when the display by different language as shown in drawing 9 is performed, both screens scroll together by touching one screen. By this, a user can see the same range by two language displays.

[0048] On the other hand, when the language of both screens is the same, only the screen where it was touched scrolls. By this, the display area of both screens can be changed and a user can see a desired area using both screens. In addition, when switches, such as "linkage" and "independence", are formed and this is touched, it is also suitable to give priority to these directions.
[0049]
[Effect of the Invention] As explained above, according to this invention, the display and voice output in language according to a demand of a user can be performed to two or more language.

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] It is related with the medium which recorded the navigation program used in the navigation equipment which can perform a display with two or more language etc., and this navigation equipment.

[Translation done.]

PRIOR ART

[Description of the Prior Art] The navigation equipment which is carried in mobiles, such as a car, and performs path guidance conventionally is known. With this navigation equipment, it has current District Public Prosecutor's Office appearance means, such as GPS (global positioning system) equipment, a map database, and a display, and the map display of the their present location circumference and the display of a their present location mark are performed on a display. Furthermore, with many navigation equipments, it has the routing function. That is, in navigation equipment, an input of the destination carries out operation calculation of the optimal path to there. And in the transit which set up the path, an intersectional enlarged drawing, an intersectional travelling direction, etc. are displayed, and path guidance to a driver is performed in a part to be shown around, such as a crossing which carries out a right and left chip box. Furthermore, the navigation equipment which performs voice guidance is also known and directions of the right and left chip box in the next crossing etc. are outputted with voice before the crossing to show.

[0003] Here, it is user-unfriendly when using a car in the area where the language of a large number, such as Europe, is used, and only single language can be used. Then, it is necessary to correspond to two or more language.

[0004] With the navigation equipment of a publication, the language used is changed to JP,4-102014,A according to the present location of a car. By this, when the border is crossed, the language used can be changed to local language.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, the display and voice output in language according to a demand of a user can be performed to two or more language.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, when the border is crossed, changing to local language is not necessarily desirable. For example, in voice guidance having been changed to local language just because it crossed the border, when a user was able to understand only a native language, an understanding is impossible. Moreover, when a display also changes to local language, it is rather unclear in many cases.

[0006] Moreover, in navigation equipment, a screen is divided into two or more screens, and the system which enables it to provide a user with much information is also known. Although it was thought that correspondence to many languages was made to a thing more intelligible for a user when such a system was used, examination was not made about such a point.

[0007] This invention is made in view of the above-mentioned technical problem, and aims at offering the medium which recorded the navigation program used in the navigation equipment which can perform a display intelligible for a user etc., and this navigation equipment corresponding to use of two or more language.

[Translation done.]

MEANS

[Means for Solving the Problem] An alphabetic character data storage means to make this invention correspond to the map database which memorizes map data, and two or more language, and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database It has the display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, and said display means is characterized by a coincidence display with two or more language being possible in a graphic character. Thus, the thing of two or more language can be written together as a graphic character. Therefore, the display of both local language and a native language etc. can be performed, and a user can see both the expression of the same local language as the display in a road etc., and the expression of a native language intelligible for a user.

[0009] Moreover, a manual scrolling means to scroll the map display screen where this invention was displayed by said display means based on manual input, In the time of a split-screen display divide the display screen by said display means, have a split-screen display means to perform a map display to each split screen, and according to said split-screen display means When the language of the graphic character of each screen differs, manual input by said manual scrolling means becomes effective to two or more split screens. When display language is the same Manual input by said manual scrolling means is characterized by having the manual scrolling screen allocation control means controlled to become effective only in one side of a split screen. For example, when the native languages of those who have got into [a driver's seat and a passenger seat], respectively differ, it is suitable to set it as that from which language differs in two screens. Moreover, when a driver wants to see both local language and a native language, it is good to see this with a split screen. In such a case, in two screens, it is the purpose to change language and it is thought that he wants, as for a map, to see the same thing. Then, by scrolling actuation to one screen, by scrolling both screens to coincidence, two screens can be made the display of the same area and scrolling in alignment with a demand of a user can be performed. Moreover, when two screens are the same language, it is hard to be thought that he wants to see the two same things. Therefore, scrolling which suited the demand of a user can be performed by making scrolling individual.

[0010] Moreover, an alphabetic character data storage means to make this invention correspond to the map database which memorizes map data, and two or more language, and to memorize the alphabetic data for a display, While performing a map display based on the graphic-character language selection means as which the specific language which was able to define whether the language according to a its present location would be made to choose as alphabetic data for said display is made to choose, and the map data read from said map database The display means which reads the alphabetic data of the language chosen by said graphic-character language selection means from said alphabetic character data storage means, and carries out character representation on a map, When it approaches during path guidance at a predetermined crossing, it has a crossing enlarged drawing display means to display the enlarged drawing of the crossing, and is characterized by carrying out character representation to a crossing enlarged drawing with the language corresponding to a its present location irrespective of the map display language till then.

[0011] Thus, local language is displayed on a crossing enlarged drawing. It is suitable for a crossing enlarged drawing that the building, signboard, etc. of a spot are shown. The building and signboard which actually exist are written in local language. Moreover, the display prepared in the road side is also written in local language. Then, by the display of local language, the display of a crossing enlarged drawing with the display in these path road side will be the same thing, and becomes intelligible for a driver.

[0012] Moreover, a voice data storage means to memorize the data for voice guidance concerning [this

invention] the name of a place corresponding to two or more language, A voice guidance means to read the data about the name of a place memorized by the voice data storage means, and to perform voice guidance when a predetermined crossing is approached, It has in a pan and said crossing enlarged drawing display means is characterized by carrying out character representation to a crossing enlarged drawing in the language corresponding to a its present location irrespective of the spoken language for voice guidance. Although the local language of a display is better, it is not easy for a driver to catch this as voice guidance is local language. Guidance intelligible for a driver can be performed by giving guidance voice into a native language and giving an indication local language.

[0013] Moreover, this invention is characterized by setting the language of the voice guidance performed with said voice guidance means as the same language, when the language corresponding to the alphabetic data and the its present location for a display which were chosen by the graphic-character language selection means is the same. The time and effort of a setup can be saved by doing in this way.

[0014] Moreover, this invention is characterized by being the medium which recorded the program for making these actuation perform in navigation equipment. Such a program is executed by computer which performs various data processing of navigation equipment. Moreover, a program is memorized and performed by various media, such as ROM and CDROM. Moreover, it is also suitable to load the program memorized by CDROM etc. to RAM of equipment, or to write the program which acquired from the exterior by the communication link in EEPROM.

[0015] The medium which records data, such as the name of a place, the data for a display Moreover, the 1st language group, While constituting from the 2nd language group, the data for voice Said 1st language group, When it constitutes from the 2nd language group and uses the word in the 1st language group corresponding to the specific name of a place, it is suitable that the 1st language group can be accessed also in a display at the 2nd language group so that the word data in the 2nd language group can be used. Furthermore, even when the 1st language group is chosen as data for a display, it is suitable for said data for voice that all of the 1st and 2nd language group can be accessed. Thus, writing together with two or more language, and a display and voice can be outputted in different language by constituting so that the word data of two or more language can be read about one word.

[Embodiment of the Invention] Hereafter, the gestalt (henceforth an operation gestalt) of operation of this invention is explained based on a drawing.

[0016] Drawing 1 is drawing showing the configuration of 1 operation gestalt. The map data of each country set in the map database 10 as the object of guidance are memorized. Especially, this map database 10 also has the data about the border, and data about the language used (in the usual case, he is every country) according to an every place region. In addition, although constituting from CDROM etc. is desirable as for this map database 10, other media, such as DVD, may be used.

[0017] Moreover, the indicative-data storage section 12 has memorized graphic characters, such as a crossing name and the name of a place, corresponding to two or more language. Furthermore, the voice data storage section 14 has memorized voice data including the name of a place required in the case of guidance etc. corresponding to two or more language. In addition, in drawing, although the indicative-data storage section 12 and the voice data storage section 14 were separately indicated to be the map databases 10, it is good also considering these as some map databases 10. That is, it is suitable to memorize a graphic character and the data for [the] reading out together as some map data.

[0018] In addition, the map database 10, the indicative-data storage section 12, and the voice data storage section 14 are made rewritable, required data are acquired by communication link etc., and storing is also suitable. Moreover, the program of a system of operation etc. may be memorized in this map database.

[0019] It is also suitable for GPS equipment 16 to use the DGPS (differential GPS) equipment which goes up precision using the error information which receives the electric wave from a GPS Satellite, detects a its present location as a location absolutely, and is supplied by the FM multiplex broadcast etc. Moreover, it is also relatively suitable to combine the location measurement which detects the signal from the magnetic marker by the autonomous navigation which carries out the migration direction detection from detection values, such as a bearing meter and transit meter, prepared in location

measurement, a road-side beacon, and on the street.
[0020] These map database 10, the indicative-data storage section 12, the voice data storage section 14, and GPS equipment 16 are connected to navigation ECU 18. Therefore, navigation ECU 18 always recognizes the its present location as a location on a map. Here, navigation ECU 18 is a computer which has ROM, RAM, CPU, etc., and the fundamental program for the actuation is memorized by ROM. However, it is not necessary to necessarily memorize various programs of operation to ROM, and they may be memorized to external storage. External storage can use various kinds of things, such as CDROM, and a hard disk, EEPROM. Moreover, it is also suitable for a program of operation to acquire by communication link, to memorize inside, or to acquire a version up part by communication link, and to update a program.
[0021] The display 22 is connected to navigation ECU 18 through the display and control section 20. A display 22 is formed in a color LCD (liquid crystal display) etc., and performs a map display, a its present location display, a name of a place display, etc. according to the data sent from navigation ECU 18. Especially, two or more screens can be displayed on a display 22. For example, it can divide into right-and-left 2 screen, and a different image can be displayed. Such control is performed by changing into the signal for a display and control section 20 displaying the picture signal for two or more screens on reception from navigation ECU 18, and displaying this on a display 22. Moreover, the control unit 24 is also connected to navigation ECU 18. This control unit 24 is a thing for various kinds of data inputs. This control unit 24 contains the touch panel formed in the front face of a display 22, can detect the touch to the carbon button displayed on the display 22, and can input various data.
[0022] Furthermore, the loudspeaker 28 is connected to navigation ECU 18 through the voice output control unit 26. When a loudspeaker 28 is driven based on this, a voice output is performed, when a sound signal is supplied from navigation ECU 18, and voice data is supplied, the voice output control device 26 synthesizes voice, and drives a loudspeaker 28. Here, this voice output control unit 26 supports two or more language, and the guidance voice of the selected language is outputted from a loudspeaker 28.
[0023] Next, actuation of initial setting of this equipment is explained based on drawing 2 . First, a menu screen is displayed on a display 22 (S11). And a user can choose the next processing by touching a display 22. When a user touches the carbon button of a user native language setup, the screen of a user native language setup is displayed (S12). And a user chooses language to set up as a native language on this screen. When this selection finishes, it returns to S11. In addition, navigation ECU 18 memorizes this by performing selection of this native language once. In addition, a setup of this native language is premised on being one in this system. However, it is [as opposed to / in setting up one, respectively **** / one user] good also as a setup of plurality being possible to a multiple user. When a native language is set up to a multiple user, respectively, it is suitable to ask whether there is any modification of a user. Moreover, when two or more native languages are assigned to one user, and local language is in agreement with other setting native languages on the basis of the native language of the highest priority, it is suitable to make it give priority to other native languages.
[0024] In S11, when manual (manual) change Mohd is chosen, the selection screen of display language is displayed (S13). In this screen, a user can choose display language manually. In addition, you may enable it to choose the native language set up by the default in S13.
[0025] And when selection of this display language is completed, the inquiry screen of whether to carry out a language addition is displayed (S14). When it answers "yes" to an inquiry of this screen, it returns to selection of return display language S13. The selection in this case is additional selection. That is, selection of the 2nd language added to the language once chosen as the eye is performed in these S14. So, with this operation gestalt, language [in / for the display of two or more language / writing together] can be specified. In addition, although one selection is a principle, you may make it additional language write together three or more language by selection of multiple times.
[0026] In S14, when "no" is chosen, the screen of language selection of guidance voice is displayed (S15). And on this screen, the language used for a guidance voice output is chosen, and processing is ended.

[0027] Next, in S11, when automatic change Mohd is chosen, the selection screen of display language is displayed (S16). In these S16, the language of a their present location and a user's native language become selectable. Here, it opts for the language of a its present location by reading the data about language which correspond from the map database 10 according to the present location recognized according to detection results, such as GPS equipment 16. Moreover, a user's native language is determined by the data set up in S12.
[0028] And in S16, when a user's native language is chosen, it carries out to a display 22 in the language which had the display of having set guidance voice as a user's native language set up (S17), and processing is ended. In addition, it is also desirable to output the same voice from a loudspeaker 28.
[0029] In S16, when the language of a its present location is chosen, the setting screen of guidance voice is displayed (S18). On this screen, "a display word's being interlocked with" and "a user's native language" are selectable. Here, if it chooses "a display word is interlocked with", it will become the language with which guidance voice is also used in the same present location as a display. On the other hand, if "a user's native language" is chosen, unlike a display word, a native language can be set up about a voice output. Although a display word is automatically changed into local language when it drives across the border by this, guidance voice will be outputted with a native language.
[0030] In addition, in the above processings, when language is set up, it is desirable to display the contents of a setting, or to carry out a voice output, and to enable it to check the contents of a setting in a user in the language then set up.
[0031] Here, display language is explained based on drawing 3 . For example, in Japan, if the language of a spot is chosen by automatic change while the user whose native language is English is operating, as shown in drawing 3 (A), a Japanese display will be performed about the name of a place etc. Moreover, if a native language is set up, an English display will be performed as shown in drawing 3 (B).
[0032] on the other hand -- S of drawing 2 -- in 14 and 13, if English which is a mother country is added to local language, as shown in drawing 3 (C), both will be written together.
[0033] Drawing 3 (C) may be displayed by preparing alternative called local language + user language writing together, and choosing this by automatic change Mohd, in drawing 2 , here. In this case, when transit is continued across the border, only local language is changed automatically and the display of user language becomes remaining as it is.
[0034] Next, the U.S. has shown an example of the crossing [user / whose native language is Japanese] enlarged drawing under operation to drawing 4 . This example is the case where automatic change Mohd was chosen in S11, the language of a its present location was chosen in S16, and a user's native language is chosen in S18. Especially, in navigation equipment, the path to the destination is set up beforehand and this example shows the case where the crossing (guidance crossing) to which it shows left turn is approached. In this case, navigation ECU 18 is the phase which resulted before [predetermined distance] the guidance crossing, and displays an intersectional enlarged drawing. In drawing, although the superficial display was shown, as for this enlarged drawing, it is desirable that it is also a three-dimensions-display.
[0035] In this display, that language is local language of that country (or area). Various displays, such as a destination display of a road, a building, and a signboard, are usually the local language of the country. And at a crossing, it refers to the display of a road etc. in many cases. Therefore, in the display of a display 22, it is desirable to adopt the same local language as an indicator etc. On the other hand, a driver is harder to understand the language of the country in many cases. Then, only guidance voice is set as a native language by setup of S18. Guidance with voice is made into what it is easy to understand to a driver by this. Therefore, in this example, although a display is English which is local language, voice guidance is performed in Japanese.
[0036] The user whose A language is a native language operates in drawing 5 , and the example which went into B countries across the border with B is shown in it. At this time, a display carries out [having set up the native language and] local language and voice guidance like the case of drawing 4 . Although a display changes to B language at this time, the voice guidance by A language is continued. For example, if the native language is set as French and it drives to Italy, display language will be changed

into Italian from French, and guidance voice will become with French.
[0037] The method of the alphabetic character data storage in "the structure of data" next the indicative-data storage section 12, and the voice data storage section 14 is explained. In this example, these data are memorized by the map database 10 together with other map data.
[0038] First, the item of "the language used" is prepared in the header unit of the map data in the map database 10. And the data about the "number of language" and each language are indicated by the item of this "language used." For example, language 1 - Language n occur, language 1 is set as Japanese and language 2 is set to English etc. And the data about the contents of the language, the classification (specification code) of a character code, a recommendation font, etc. are memorized about each language.
[0039] Moreover, about the map and name data division which memorize the name of a place etc., as shown in drawing 6 , the column of a "character string" is prepared with a name attribute, X, Y coordinate, etc. And as for the column of this character string, the offset pointer of each language (language 1 - language n) of every is indicated after the "character string byte count." This offset pointer shows the storage location of each language. And the "alphabetic character byte count" of each language and the "character string" are shown in the location pinpointed with this offset pointer.
[0040] If the character string is the same in two or more language, it will overlap and it will become unnecessary thus, to have data of an "alphabetic character number" and a "character string" by using an offset pointer. If the character string of language 1 and the character string of language 2 are the same, it will become unnecessary for example, to overlap and have data of an "alphabetic character number" and a "character string" in a language 1 offset pointer and a language 2 offset pointer by indicating the same location. In addition, since there are no data of an "alphabetic character number" and a "character string", one's are [an offset pointer] unnecessary in the case of single language.
[0041] The display of the guidance alphabetic character in the indicative-data storage section 12 and the voice data storage section 14 etc. and storage of reading character-string data are shown in drawing 7 . Thus, both arrange and memorize in the one storage section. The method of storage is the same as that of above-mentioned map data, and has excluded duplication storage using the offset pointer. In addition, in this example, it reads, and to a character string, memorize a phonetic symbol, it is made to synthesize voice based on this, and voice is generated in it. Text data is memorized, and it can also be made to synthesize voice, and sampling voice data is memorized, and, from now on, voice may be generated.
[0042] The configuration of a country and a language table is shown in drawing 8 . Like [of Japan], although a country and language are supported 1 to 1 in many cases, as for each of U.S. or Britain, it is desirable for English to be local language, and for two or more language to be adopted as local language like Canada or Switzerland, and to have the correspondence relation between a country and language in a table.
[0043] Furthermore, it is also required about each country to memorize the data about the border, and one-country Uchi also needs to have data in the language area, when language changes with areas. Unlike the border, the language area is not necessarily clear in many cases. In this case, it is good to make the remarkable range into a border area, to adopt two language as this border area as local language, and to write this together. Moreover, priority can also be given to what was chosen previously, a native language, etc. in this border area. In addition, data, such as these borders, are usually memorized as data of a closed loop.
[0044] "Split-screen display" In this operation gestalt, the split-screen display is further attained in the display 22. For example, as shown in drawing 9 , the coincidence display of right-and-left 2 screen is possible. Screens, such as a map screen (their present location circumference screen), a crossing enlarged drawing, a broader-based display, and all root displays, can be suitably chosen as these two screens, and can usually be displayed on them.
[0045] Here, the same screen can also be expressed as this operation gestalt. That is, as shown in drawing 9 , the same map display is performed on a right-and-left screen, and such language is changed. By this, a user can see a local language display and a native language display to coincidence. For example, the man of a spot and the foreigner are sitting on the driver's seat and the passenger seat, and

when both native languages differ, it becomes a display intelligible for both by displaying local language and a foreigner's native language.

[0046] Moreover, in screen rolling in the case of this split-screen display, navigation ECU 18 recognizes the language of each screen, and changes the contents of scrolling. That is, in a right-and-left screen, when the same language is adopted, while was specified and directions of scrolling are confirmed only on a screen. On the other hand, while displaying the language with which two screens differ, both screens are scrolled together. In addition, it is also suitable for such control to limit, when the same area is being displayed by this scale in two screens.

[0047] For example, scrolling is performed by touching the map of the right-and-left upper and lower sides of a screen. Then, when the display by different language as shown in drawing 9 is performed, both screens scroll together by touching one screen. By this, a user can see the same range by two language displays.

[0048] On the other hand, when the language of both screens is the same, only the screen where it was touched scrolls. By this, the display area of both screens can be changed and a user can see a desired area using both screens. In addition, when switches, such as "linkage" and "independence", are formed and this is touched, it is also suitable to give priority to these directions.

[Translation done.]

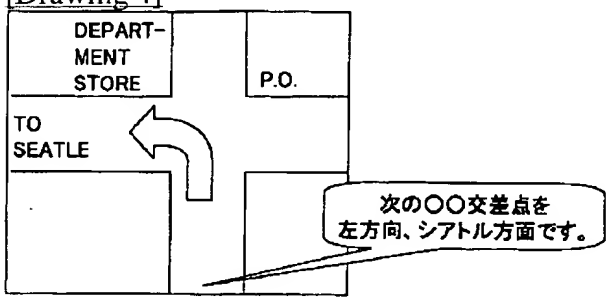
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the whole equipment configuration of an operation gestalt.
[Drawing 2] It is drawing showing actuation and a display.
[Drawing 3] It is drawing showing the example of a display of two or more language writing together.
[Drawing 4] It is drawing showing an example in case a display differs from the language of guidance voice.
[Drawing 5] It is drawing showing the display at the time of crossing the border, and the example of audio modification.
[Drawing 6] It is drawing showing the DS of a map name.
[Drawing 7] It is drawing showing the display of an alphabetic character, and the DS of reading.
[Drawing 8] It is drawing showing the relation between a country and language.
[Drawing 9] It is drawing showing the example of a split-screen display.
[Description of Notations]
10 A map database, 12 The indicative-data storage section, 14 The voice data storage section, 16 GPS equipment, 18 Navigation ECU, 20 A display and control section, 22 displays, 24 A control unit, 26 A voice output control unit, 28 Loudspeaker.

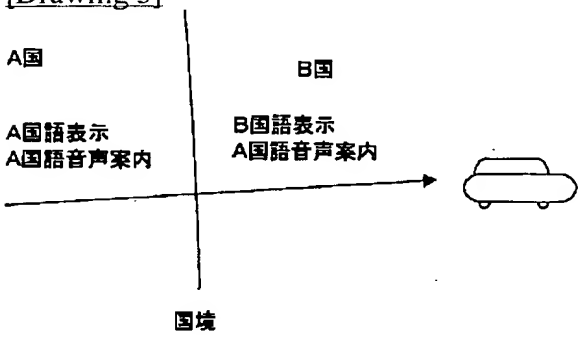
[Translation done.]

DRAWINGS

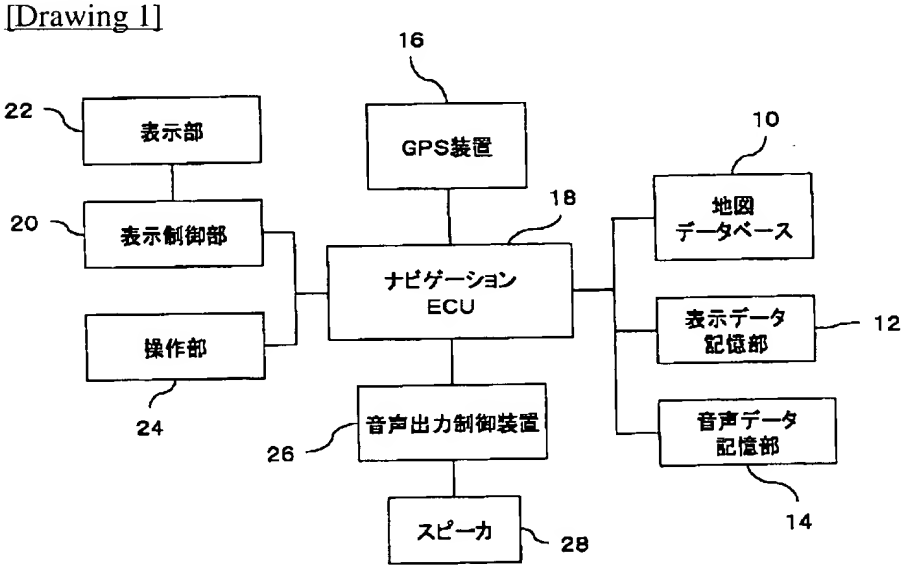
[Drawing 4]



[Drawing 5]



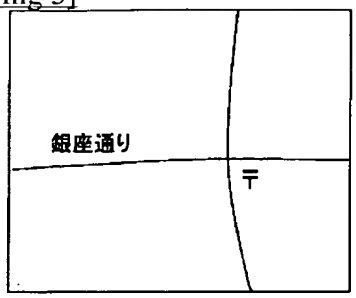
[Drawing 1]



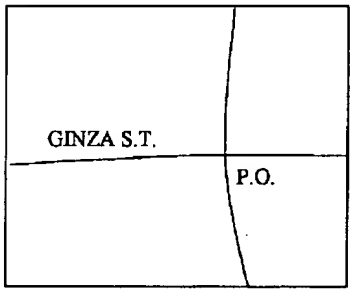
実施形態の構成

[Drawing 3]

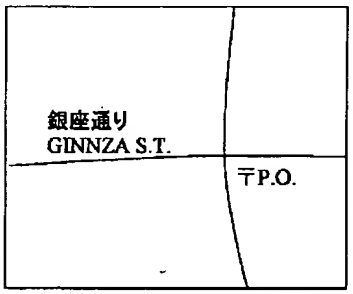
(A)



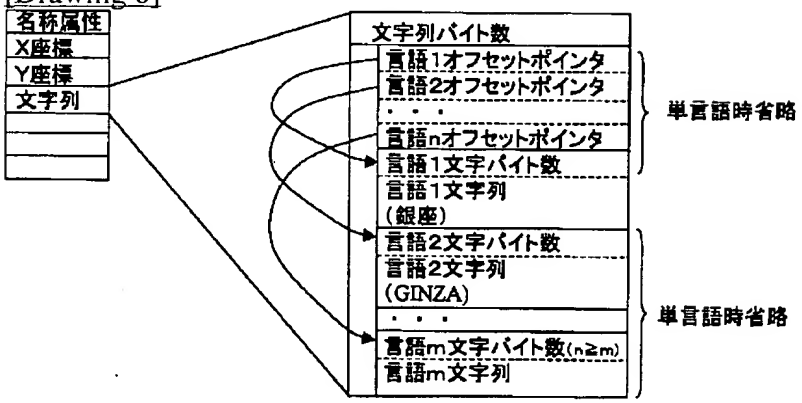
(B)



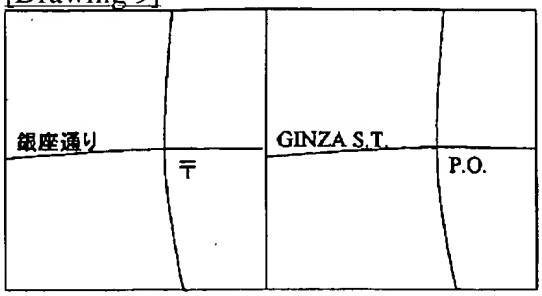
(C)



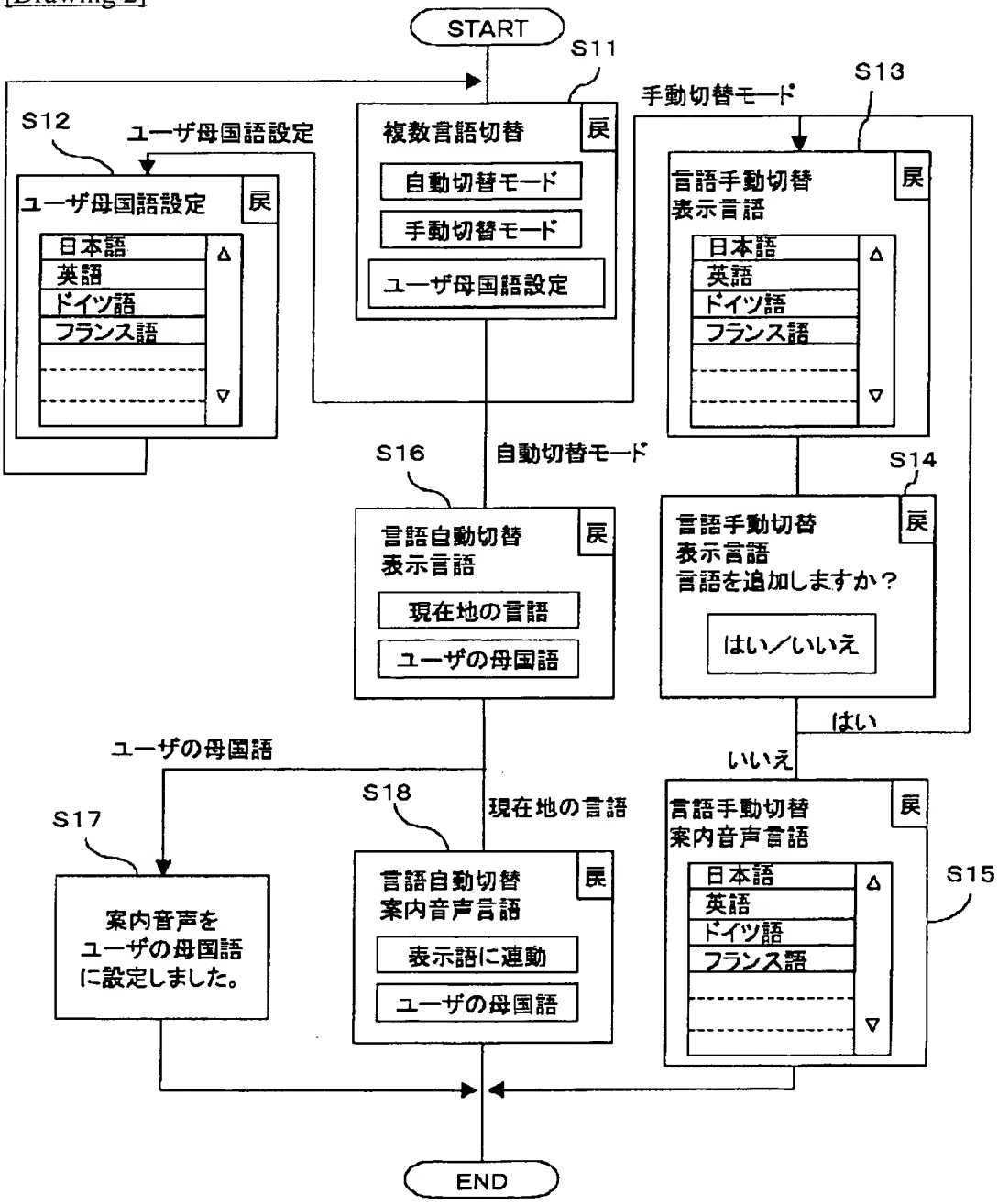
[Drawing 6]



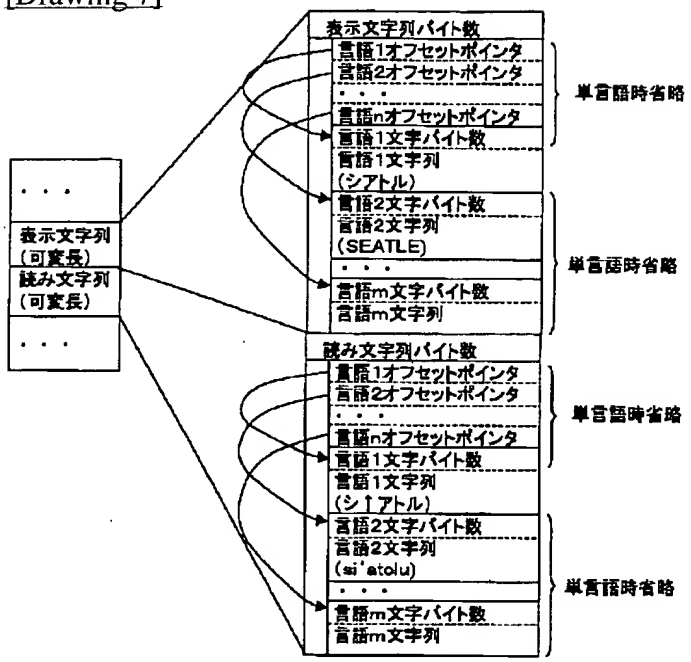
[Drawing 9]



[Drawing 2]



[Drawing 7]



[Drawing 8]

国・言語テーブル

日本	日本語
米国	英語
英国	英語
カナダ	英語 フランス語
スイス	フランス語 ドイツ語 イタリア語
・ ・ ・ ・	・ ・ ・ ・

[Translation done.]

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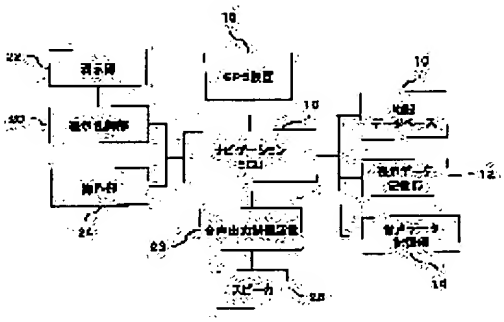
(54) NAVIGATION DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a display and a voice output in a language meeting a users' demand for a multilingual service.

SOLUTION: This device comprises a map database 10 to store map data, a character data memory means 12 to store character data for a multilingual display, a display character language selection means to select a language for a present place as character data for a display or to select a predetermined language, and a display means 22 to display a map on the basis of map data read out of a map database and to display characters on the map on the basis of character data of a language that is selected by the display character language selection means and which are read out of the character data memory means 12. The display means 22, in particular, can display multilingual display characters simultaneously.



LEGAL STATUS

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[Date of final disposal for application]

[Patent number]

[Date of registration]

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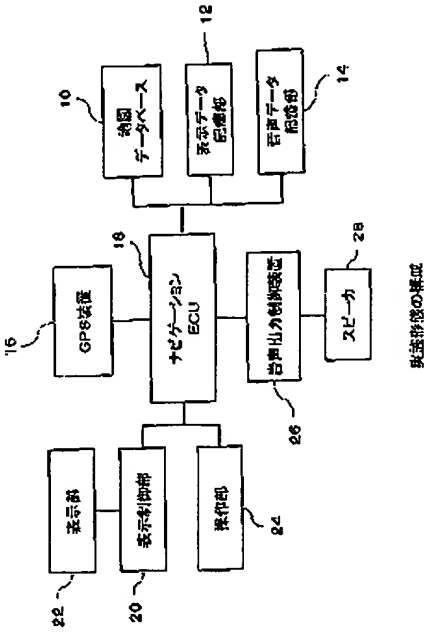
(54)【発明の名称】　ナビゲーション装置

(57)【要約】　（修正有）

【課題】　複数言語の使用に対応して、ユーザの要求にあった言語での表示や音声出力を行う。

【解決手段】　地図データを記憶する地図データベース１０と、複数の言語に対応させて、表示用の文字データを記憶する文字データ記憶手段１２と、前記表示用の文字データとして現在地に応じた言語を選択させるか、予め定められた特定の言語を選択させる表示文字言語選択手段と、前記地図データベースから読み出した地図データに基づき地図表示を行うと共に、前記表示文字言語選択手段によって選択された言語の文字データを前記文字データ記憶手段から読み出して地図上に文字表示する表示手段２２とから構成されるナビゲーション装置である。特に前記表示手段は、表示文字を複数言語にて同時表示可能である。



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【特許請求の範囲】
【請求項１】　地図データを記憶する地図データベースと．
複数の言語に対応させて．表示用の文字データを記憶する文字データ記憶手段と．
前記表示用の文字データとして現在地に応じた言語を選択させるか、予め定められた特定の言語を選択させる表示文字言語選択手段と、
前記地図データベースから読み出した地図データに基づき地図表示を行うと共に．前記表示文字言語選択手段によって選択された言語の文字データを前記文字データ記憶手段から読み出して地図上に文字表示する表示手段と．
を有し、
前記表示手段は．表示文字を複数言語にて同時表示可能であることを特徴とするナビゲーション装置。
【請求項２】　請求項１に記載の装置において．
前記表示手段により表示された地図表示画面を手動入力に基づきスクロールする手動スクロール手段と．
前記表示手段による表示画面を分割して、各分割画面に地図表示を行う分割画面表示手段と．
を有し、
前記分割画面表示手段による分割画面表示時において、各画面の表示文字の言語が異なる場合には、前記手動スクロール手段による手動入力が複数の分割画面に対し有効になり、
表示言語が同一である場合には、前記手動スクロール手段による手動入力は、分割画面の一方のみに有効になるように制御する手動スクロール画面割当制御手段と、
を有することを特徴とするナビゲーション装置。
【請求項３】　地図データを記憶する地図データベースと．
複数の言語に対応させて．表示用の文字データを記憶する文字データ記憶手段と．
前記表示用の文字データとして現在地に応じた言語を選択させるか、予め定められた特定の言語を選択させる表示文字言語選択手段と、
前記地図データベースから読み出した地図データに基づき地図表示を行うと共に．前記表示文字言語選択手段によって選択された言語の文字データを前記文字データ記憶手段から読み出して地図上に文字表示する表示手段と．
経路案内中に所定の交差点に接近した場合には．その交差点の拡大図を表示する交差点拡大図表示手段と．
を有し、
交差点拡大図には、それまでの地図表示言語に拘わらず．現在地に対応した言語により文字表示させるようにしたことを特徴とするナビゲーション装置。
【請求項４】　請求項３に記載の装置において．
地名に関する音声案内用のデータを複数の言語に対応して記憶する音声データ記憶手段と、
所定の交差点に接近した場合に、音声データ記憶手段に記憶されている地名に関するデータを読み出して音声案内を行う音声案内手段と．をさらに有し、
前記交差点拡大図表示手段は、交差点拡大図には．音声案内用の音声言語に拘わらず、現在地に対応した言語にて文字表示することを特徴とするナビゲーション装置。
【請求項５】　請求項４に記載の装置において．
表示文字言語選択手段により選択された表示用の文字データと現在地に対応した言語が同一である場合には、前記音声案内手段により行う音声案内の言語も同一の言語に設定することを特徴とするナビゲーション装置。
【請求項６】　ナビゲーション装置に．地図及び文字表示を行わせるナビゲーションプログラムを記録した媒体であって、
地図データを記憶する地図データベースから地図データを読み出させ．読み出した地図データに基づき表示手段に地図表示を行わせ、
複数言語に対応した文字データを記憶する文字データ記憶手段から、予め選択された言語の文字データを文字データ記憶手段から読み出させ、前記表示地図上に文字表示させ、
かつ．予め選択された言語として、現在地に応じた言語とユーザが指定した言語の少なくとも２つの言語が採用可能であり、前記表示文字を複数言語にて同時表示可能とすることを特徴とするナビゲーションプログラムを記録した媒体。
【請求項７】　請求項６に記載の媒体において．
分割画面表示の場合には．地図表示画面を複数画面に分割して表示させ．
この分割画面表示の場合であって、各画面の表示文字の言語が異なる場合には、ユーザの操作に応じて複数の分割画面を同時スクロールさせ、
分割画面表示であって、各画面の表示言語が同一である場合には、ユーザの操作に応じて、分割画面の一方のみをスクロールさせることを特徴とするナビゲーションプログラムを記録した媒体。
【請求項８】　ナビゲーション装置に．地図及び文字表示を行わせるナビゲーションプログラムを記録した媒体であって、
地図データを記憶する地図データベースから地図データを読み出させ．読み出した地図データに基づき表示手段に地図表示を行わせ、
複数言語に対応した文字データを記憶する文字データ記憶手段から、予め選択された言語の文字データを文字データ記憶手段から読み出させ、前記表示地図上に文字表示させ、
経路案内中に所定の交差点に接近した場合には．その交差点の拡大図を表示させ．かつこの交差点拡大図には、それまでの地図表示言語に拘わらず．現在地に対応した

言語により文字表示させることを特徴とするナビゲーションプログラムを記録した媒体。

【請求項９】　請求項８に記載の媒体であって．

さらに、所定の交差点に接近した場合には、地名に関する音声データを読み出させ．読み出した音声データに基づいて音声案内を行わせ．

かつ交差点拡大図には、音声案内用の音声言語に拘わらず．現在地に対応した言語にて文字表示を行わせることを特徴とするナビゲーションプログラムを記録した媒体。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】複数の言語での表示などを行うことができるナビゲーション装置及びこのナビゲーション装置において利用されるナビゲーションプログラムを記録した媒体に関する。

【０００２】

【従来の技術】従来より．車両などの移動体に搭載され経路案内を行うナビゲーション装置が知られている。このナビゲーション装置では．ＧＰＳ（グローバル・ポジショニング・システム）装置などの現在地検出手段と、地図データベースと、ディスプレイを有し、ディスプレイ上に現在地周辺の地図表示及び現在地マークの表示を行う。さらに．多くのナビゲーション装置では．経路設定機能を有している。すなわち、ナビゲーション装置において、目的地を入力すると、そこまでの最適経路を演算算出する。そして、経路を設定した走行においては、右左折する交差点など案内が必要な箇所では、交差点の拡大図及び進行方向などを表示し、ドライバに対する経路案内を行う。さらに、音声案内を行うナビゲーション装置も知られており、案内を行う交差点の手前で．次の交差点における右左折の指示などを音声で出力する。

【０００３】ここで、ヨーロッパなど多数の言語が利用される地域において、車両を使用する場合には．単一の言語しか使用できないと使い勝手が悪い。そこで．複数言語に対応する必要がある。

【０００４】特開平４－１０２０１４号公報に記載のナビゲーション装置では、車両の現在地に応じて．使用言語を切り替える。これによって、国境を越えた場合に、使用言語を現地語に切り替えることができる。

【０００５】

【発明が解決しようとする課題】しかし、国境を越えた場合に、現地語に切り替えることが必ずしも好ましいとは限らない。例えば、ユーザが母国語しか理解できない場合において．国境を越えたからといって音声案内が現地語に切り替えられたのでは、理解ができない。また、表示も現地語に切り替わってしまうとかえってわかりにくい場合も多い。

【０００６】また、ナビゲーション装置においては、画面を複数の画面に分割し．ユーザに多くの情報を提供できるようにするシステムも知られている。このようなシステムを利用した場合に．多言語への対応はよりユーザにわかりやすいものにできると考えられるが、このような点について検討がなされていなかった。

【０００７】本発明は、上記課題に鑑みなされたものであり．複数言語の使用に対応して、ユーザにわかりやすい表示などが行えるナビゲーション装置及びこのナビゲーション装置において利用されるナビゲーションプログラムを記録した媒体を提供することを目的とする。

【０００８】

【課題を解決するための手段】本発明は、地図データを記憶する地図データベースと、複数の言語に対応させて．表示用の文字データを記憶する文字データ記憶手段と．前記表示用の文字データとして現在地に応じた言語を選択させるか．予め定められた特定の言語を選択させる表示文字言語選択手段と．前記地図データベースから読み出した地図データに基づき地図表示を行うと共に、前記表示文字言語選択手段によって選択された言語の文字データを前記文字データ記憶手段から読み出して地図上に文字表示する表示手段と、を有し．前記表示手段は．表示文字を複数言語にて同時表示可能であることを特徴とする。このように．表示文字として、複数の言語のものを併記できる。従って、現地語と母国語の両方の表示などが行え．ユーザは．道路における表示などと同様の現地語の表現と、ユーザにとってわかりやすい母国語の表現の両方を見ることができる。

【０００９】また、本発明は、前記表示手段により表示された地図表示画面を手動入力に基づきスクロールする手動スクロール手段と、前記表示手段による表示画面を分割して、各分割画面に地図表示を行う分割画面表示手段と．を有し．前記分割画面表示手段による分割画面表示時において．各画面の表示文字の言語が異なる場合には．前記手動スクロール手段による手動入力が複数の分割画面に対し有効になり．表示言語が同一である場合には．前記手動スクロール手段による手動入力は．分割画面の一方のみに有効になるように制御する手動スクロール画面割当制御手段と、を有することを特徴とする。例えば．運転席と助手席にそれぞれ搭乗している人の母国語が異なる場合には、２つの画面において言語が異なるものに設定することが好適である。また、ドライバが現地語と母国語の両方を見たい場合に．これを分割画面で見るとよい。このような場合においては、２つの画面において、言語を異ならせることが目的であり、地図は同一のものを見たいと考えられる。そこで、１つの画面に対するスクロール操作により、両画面を同時にスクロールすることによって、２つの画面を同一の地域の表示にすることができ．ユーザの要求に沿ったスクロールができる。また、２つの画面が同一の言語であった場合、同じものを２つ見たいとは考えられにくい。従って．スクロールを個別とすることで．ユーザの要求にあったスク

ロールができる。

【００１０】また、本発明は、地図データを記憶する地図データベースと、複数の言語に対応させて、表示用の文字データを記憶する文字データ記憶手段と、前記表示用の文字データとして現在地に応じた言語を選択させるか、予め定められた特定の言語を選択させる表示文字言語選択手段と、前記地図データベースから読み出した地図データに基づき地図表示を行うと共に、前記表示文字言語選択手段によって選択された言語の文字データを前記文字データ記憶手段から読み出して地図上に文字表示する表示手段と、経路案内中に所定の交差点に接近した場合には、その交差点の拡大図を表示する交差点拡大図表示手段と、を有し、交差点拡大図には、それまでの地図表示言語に拘わらず、現在地に対応した言語により文字表示させるようにしたことを特徴とする。

【００１１】このように、交差点拡大図には、現地語の表示を行う。交差点拡大図には、現地の建物・看板などを示すことが好適である。実際に存在する建物や看板は、現地語で書かれている。また、路側に設けられている表示も現地語で書かれている。そこで、現地語の表示により、これら道路側における表示との交差点拡大図の表示が同一のものになり、ドライバにとってわかりやすくなる。

【００１２】また、本発明は、地名に関する音声案内用のデータを複数の言語に対応して記憶する音声データ記憶手段と、所定の交差点に接近した場合に、音声データ記憶手段に記憶されている地名に関するデータを読み出して音声案内を行う音声案内手段と、をさらに有し、前記交差点拡大図表示手段は、交差点拡大図には、音声案内用の音声言語に拘わらず、現在地に対応した言語にて文字表示することを特徴とする。表示は、現地語の方がよいが、音声案内が現地語であると、ドライバはこれを聞き取ることは容易でない。案内音声を母国語、表示を現地語にすることで、ドライバにとってわかりやすい案内が行える。

【００１３】また、本発明は、表示文字言語選択手段により選択された表示用の文字データと現在地に対応した言語が同一である場合には、前記音声案内手段により行う音声案内の言語も同一の言語に設定することを特徴とする。このようにすることによって、設定の手間が省ける。

【００１４】また、本発明は、ナビゲーション装置において、これらの動作を行わせるためのプログラムを記録した媒体であることを特徴とする。このようなプログラムは、ナビゲーション装置の各種データ処理を行うコンピュータにより実行される。また、プログラムは、ＲＯＭ、ＣＤＲＯＭなど各種媒体に記憶されて実行される。また、ＣＤＲＯＭなどに記憶されたプログラムを装置のＲＡＭにロードしたり、外部から通信で取得したプログラムをＥＥＰＲＯＭに書き込んだりすることも好適である。

【００１５】また、地名などのデータを記録する媒体は、表示用データを第１の言語群、第２の言語群から構成すると共に音声用データも前記第１の言語群、第２の言語群から構成し、特定の地名に対応する第１の言語群における単語を使用する場合、第２の言語群における単語データを使用できるよう第１の言語群を表示中でも第２の言語群にアクセスできることが好適である。さらに、第１の言語群が表示用データとして選択されていたときでも前記音声用データは第１、第２の言語群のいずれにもアクセスすることができることが好適である。このように、１つの単語について、複数の言語の単語データを読み出せるように構成しておくことにより、複数言語での併記や、表示と音声とを異なる言語で出力することができる。

【発明の実施の形態】以下、本発明の実施の形態（以下実施形態という）について、図面に基づいて説明する。

【００１６】図１は、一実施形態の構成を示す図である。地図データベース１０に案内の対象となる各国の地図データが記憶されている。特に、この地図データベース１０は、国境についてのデータや、各地域に応じた（通常の場合は国毎）使用言語についてのデータも有している。なお、この地図データベース１０は、ＣＤＲＯＭなどで構成することが好ましいが、ＤＶＤなど他の媒体を利用してもよい。

【００１７】また、表示データ記憶部１２は、交差点名や地名などの表示文字を複数の言語に対応して記憶している。さらに、音声データ記憶部１４は、案内の際に必要な地名などを含む音声データを複数の言語に対応して記憶している。なお、図においては、表示データ記憶部１２、音声データ記憶部１４を、地図データベース１０と別個に記載したが、これらを地図データベース１０の一部としてもよい。すなわち、表示文字及びその読み上げのためのデータを地図データの一部として一緒に記憶することが好適である。

【００１８】なお、地図データベース１０、表示データ記憶部１２、音声データ記憶部１４を書き替え可能とし、必要なデータを通信などで取得し、蓄えることも好適である。また、この地図データベース内にシステムの動作プログラムなどを記憶しておいてもよい。

【００１９】ＧＰＳ装置１６は、ＧＰＳ衛星からの電波を受信して現在地を絶対位置として検出するものであり、ＦＭ多重放送などにより供給される誤差情報を利用して精度を上昇するＤＧＰＳ（ディファレンシャルＧＰＳ）装置を利用することも好適である。また、方位計、走行メータなどの検出値から移動方向検出する自律航法による相対的に位置測定や、路側ビーコンや、路上に設けられた磁気マーカからの信号を検出する位置測定などを組み合わせることも好適である。

【００２０】これら地図データベース１０、表示データ

記憶部１２、音声データ記憶部１４及びＧＰＳ装置１６は、ナビゲーションＥＣＵ１８に接続されている。従って、ナビゲーションＥＣＵ１８は、常に現在地を地図上の位置として認識している。ここで、ナビゲーションＥＣＵ１８は、ＲＯＭ、ＲＡＭ、ＣＰＵなどを有するコンピュータであり、その動作のための基本的なプログラムはＲＯＭに記憶されている。しかし、各種動作プログラムは、必ずしもＲＯＭに記憶しておく必要はなく、外部記憶装置に記憶しておいてもよい。外部記憶装置は、ＣＤＲＯＭや、ハードディスク、ＥＥＰＲＯＭなど各種のものが利用できる。また、動作プログラムは、通信で取得し、内部に記憶したり、バージョンアップ部分を通信で取得し、プログラムを更新することも好適である。

【００２１】ナビゲーションＥＣＵ１８には、表示制御部２０を介し、表示部２２が接続されている。表示部２２は、カラーＬＣＤ（液晶ディスプレイ）などで形成され、ナビゲーションＥＣＵ１８から送られてくるデータに応じ、地図表示、現在地表示、地名表示などを行う。特に、表示部２２には、複数の画面を表示できる。例えば、左右２画面に分割し、異なる画像を表示することができる。このような制御は、表示制御部２０が複数画面用の画像信号をナビゲーションＥＣＵ１８から受け取り、これを表示部２２に表示するための信号に変換することによって行う。また、ナビゲーションＥＣＵ１８には、操作部２４も接続されている。この操作部２４は、各種のデータ入力のためのものである。この操作部２４は、表示部２２の前面に形成されたタッチパネルを含んでおり、表示部２２に表示されたボタンに対するタッチを検出し各種データを入力することができる。

【００２２】さらに、ナビゲーションＥＣＵ１８には、音声出力制御装置２６を介し、スピーカ２８が接続されている。音声出力制御装置２６は、ナビゲーションＥＣＵ１８から音声信号が供給された場合には、これに基づいてスピーカ２８を駆動し、音声出力を行い、音声データが供給された場合には、音声合成してスピーカ２８を駆動する。ここで、この音声出力制御装置２６は、複数の言語に対応しており、スピーカ２８からは選択された言語の案内音声が出力される。

【００２３】次に、本装置の初期設定の動作について、図２に基づいて説明する。まず、表示部２２には、メニュー画面が表示される（Ｓ１１）。そして、ユーザは、表示部２２をタッチすることで、次の処理を選択することができる。ユーザがユーザ母国語設定のボタンにタッチした場合には、ユーザ母国語設定の画面が表示される（Ｓ１２）。そして、ユーザは、この画面上で、母国語として設定したい言語を選択する。この選択が終わった場合には、Ｓ１１に戻る。なお、この母国語の選択は、一度行うことでナビゲーションＥＣＵ１８がこれを記憶する。なお、本システムでは、この母国語の設定は１つであることを前提としている。しかし、複数ユーザに対

しそれぞれ１つを設定したり、１ユーザに対し複数を設定可能としてもよい。複数ユーザに対し母国語をそれぞれ設定した場合には、ユーザの変更があるかを問い合わせることが好適である。また、１ユーザに複数の母国語を設定した場合には、最優先の母国語を基本とし、現地語がその他の設定母国語と一致する場合にその他の母国語を優先するようにしたりすることが好適である。

【００２４】Ｓ１１において、手動（マニュアル）切替モードを選択した場合には、表示言語の選択画面が表示される（Ｓ１３）。この画面において、ユーザは、表示言語を手動で選択することができる。なお、Ｓ１３において、設定されている母国語をデフォルトで選択できるようにしてもよい。

【００２５】そして、この表示言語の選択が終了した場合には、言語追加をするか否かの問い合わせ画面が表示される（Ｓ１４）。この画面の問い合わせに対し、「はい」と答えた場合、Ｓ１３に戻り表示言語の選択に戻る。この場合の選択は、追加の選択である。すなわち、一度目に選択した言語に追加する第２の言語の選択がこのＳ１４において行われる。そこで、本実施形態では、複数の言語の表示を併記における言語を指定することができる。なお、追加の言語は１回の選択が原則であるが、複数回の選択によって３以上の言語を併記するようにしてもよい。

【００２６】Ｓ１４において、「いいえ」が選択された場合には、案内音声の言語選択の画面が表示される（Ｓ１５）。そして、この画面で、案内音声出力に使われる言語を選択し、処理を終了する。

【００２７】次に、Ｓ１１において、自動切替モードを選択した場合には、表示言語の選択画面が表示される（Ｓ１６）。このＳ１６では、現在地の言語と、ユーザの母国語が選択可能になる。ここで、現在地の言語は、ＧＰＳ装置１６などの検出結果に応じて認識した現在地に応じ、地図データベース１０から対応する言語についてのデータを読み出すことによって決定する。また、ユーザの母国語は、Ｓ１２において設定されたデータによって決定される。

【００２８】そして、Ｓ１６において、ユーザの母国語が選択された場合には、案内音声をユーザの母国語に設定しましたという表示を設定された言語で表示部２２に行い（Ｓ１７）、処理を終了する。なお、スピーカ２８から、同様の音声を出力することも好ましい。

【００２９】Ｓ１６において、現在地の言語が選択された場合には、案内音声の設定画面が表示される（Ｓ１８）。この画面では、「表示語に連動」と「ユーザの母国語」が選択可能である。ここで、「表示語に連動」を選択すれば、案内音声も表示と同じ現在地で使用されている言語になる。一方、「ユーザの母国語」を選択すると、表示語とは異なり、音声出力については母国語を設定することができる。これによって、国境を越えてドラ

イブした場合には、表示語は現地語に自動的に変更されるが、案内音声は母国語のまま出力されることになる。

【0030】なお、上述のような処理において、言語が設定されたときには、そのときに設定された言語で設定内容を表示したり音声出力し、ユーザにおいて設定内容を確認できるようにすることが好ましい。

【0031】ここで、表示言語について、図3に基づいて説明する。例えば、日本において、母国語が英語のユーザが運転しているときに、自動切替で現地の言語を選択すれば、図3（A）に示すように地名などについて日本語の表示が行われる。また、母国語を設定すれば、図3（B）に示すように英語の表示が行われる。

【0032】一方、図2のS14、13において、現地語に母国である英語を追加すれば、図3（C）に示すように、両者が併記される。

【0033】ここで、図2において、自動切替モードにて、現地語＋ユーザ言語併記という選択肢を設け、ここを選択することで、図3（C）の表示を行ってもよい。この場合には、国境を越えて走行を継続した場合には、現地語のみが自動的に変更され、ユーザ言語の表示はそのままになる。

【0034】次に、図4には、母国語が日本語のユーザが米国で運転中における交差点拡大図の一例が示してある。この例は、S11において自動切替モードが選択され、S16において現在地の言語が選択され、S18においてユーザの母国語が選択された場合である。特に、この例は、ナビゲーション装置において、目的地までの経路が予め設定されており、左折の案内を行う交差点（案内交差点）に近づいた場合を示している。この場合、ナビゲーションECU18は、案内交差点の所定距離手前に至った段階で、交差点の拡大図を表示する。図においては、平面的な表示を示したが、この拡大図は、三次元的な表示であることも好ましい。

【0035】この表示において、その言語は、その国（または地域）の現地語である。道路の行き先表示、建物、看板などの各種表示は、通常その国の現地語である。そして、交差点では道路の表示などを参考にする場合も多い。従って、表示部22の表示においては、標識などと同じ現地語を採用することが望ましい。一方、ドライバは、その国の言語を理解しがたい場合も多い。そこで、S18の設定によって、案内音声のみを母国語に設定する。これによって、音声による案内をドライバに理解しやすいものにできる。従って、この例では、表示は現地語である英語であるが、音声案内は、日本語で行われる。

【0036】図5には、A国語が母国語のユーザが運転をして、Bとの国境を越えてB国に入った例を示してある。このとき、図4の場合と同様に、表示は現地語、音声案内は母国語が設定してあったとする。このときには、表示はB国語に変わるが、A国語による音声案内が

継続される。例えば、母国語をフランス語に設定しておき、イタリアへドライブすれば、表示言語がフランス語からイタリア語に変更され、案内音声はフランス語のままになる。

【0037】「データの構造」次に、表示データ記憶部12及び音声データ記憶部14における文字データの記憶の仕方について、説明する。この例では、これらデータは地図データベース10に他の地図データと一緒に記憶されている。

【0038】まず、地図データベース10における地図データのヘッダ部には、「使用言語」という項目を設ける。そして、この「使用言語」の項目には、「言語数」及びそれぞれの言語についてのデータが記載される。例えば、言語1～言語nがあり、言語1が日本語、言語2が英語などに設定される。そして、各言語について、その言語の内容、文字コードの種別（規格コード）、推奨フォントなどについてのデータが記憶される。

【0039】また、地名などを記憶する地図・名称データ部については、図6に示すように、名称属性、X，Y座標などと共に、「文字列」の領が設けられている。そして、この文字列の領は、「文字列バイト数」の後に、各言語（言語1～言語n）毎のオフセットポインタが記載されている。このオフセットポインタは、それぞれの言語の記憶位置を示すものである。そして、このオフセットポインタで特定される位置に各言語の「文字バイト数」、「文字列」が示されている。

【0040】このようにオフセットポインタを利用することで、複数の言語においてその文字列が同一であれば、「文字数」、「文字列」のデータを重複して持つ必要がなくなる。例えば、言語1の文字列と、言語2の文字列が同一であれば、言語1オフセットポインタと、言語2オフセットポインタに同一の位置を記載することで、「文字数」、「文字列」のデータを重複して持つ必要がなくなる。なお、単一言語の場合には、「文字数」、「文字列」のデータが1つしかないため、オフセットポインタは不要である。

【0041】図7に、表示データ記憶部12及び音声データ記憶部14における案内文字などの表示及び読み文字列データの記憶について示す。このように、両者は1つの記憶部に並べて記憶しておく。記憶の仕方は、上述の地図データと同様であり、オフセットポインタを利用して重複記憶を省いている。なお、この例では読み文字列には、発音記号を記憶し、これに基づいて音声合成させ音声を発生する。テキストデータを記憶しておいて音声合成させることもでき、またサンプリング音声データを記憶しておいてこれから音声を発生させてもよい。

【0042】図8に、国・言語テーブルの構成を示す。日本のように、国と言語に1対1に対応している場合が多いが、米国や英国はいずれも英語が現地語であり、またカナダやスイスのように、複数の言語が現地語として

採用される場合もあり、国と言語の対応関係をテーブルに持っておくことが好ましい。

【0043】さらに、各国について、国境についてのデータを記憶しておくことも必要であり、また1国内でも地域によって、言語が異なる場合には、その言語圏のデータを持つ必要がある。言語圏は、国境と異なり必ずしも明確でない場合も多い。この場合には、かなりの範囲を境界領域とし、この境界領域には現地語として2つの言語を採用しておき、これを併記したりするとよい。また、この境界領域では、先に選択されていたものや、母国語などを優先することもできる。なお、これら国境などのデータは、道路網ループのデータとして記憶される。

【0044】「分割画面表示」さらに、本実施形態において、表示部22においては、分割画面表示が可能になっている。例えば、図9に示すように、左右2画面の同時表示が可能である。この2つの画面には、通常地図画面（現在地周辺画面）、交差点拡大図、広域表示、全ルート表示などの画面を適宜選択して表示可能である。

【0045】ここで、本実施形態では、同一の画面を表示することもできる。すなわち、図9に示すように、左右画面に同一の地図表示を行い、これらの言語を異ならせる。これによって、ユーザは、現地語表示と母国語表示を同時に見ることができる。例えば、運転席と助手席に、現地の人と、外国人が座っており、両者の母国語が異なる場合、現地語と、外国人の母国語を表示することで両者にとってわかりやすい表示となる。

【0046】また、ナビゲーションECU18は、この分割画面表示の際の画面スクロールにおいて、各画面の言語を認識しスクロールの内容を変更する。すなわち、左右画面において、同一の言語が採用されていた場合には、スクロールの指示は指定された一方の画面にのみ有効とする。一方、2つの画面が異なる言語を表示していたときには、両方の画面を一緒にスクロールする。なお、このような制御は2つの画面において同一の地域の表示を同縮尺で行っている場合に限定することも好適である。

＊【0047】例えば、スクロールは、画面の左右上下の地図をタッチすることによって行われる。そこで、図9に示すような異なる言語による表示が行われていた場合、一方の画面にタッチすることによって、両画面が一緒にスクロールする。これによって、ユーザは、同一の範囲を2つの言語表示により見ることができる。

【0048】一方、両画面の言語が同一であった場合には、タッチされた画面のみがスクロールする。これによって、両画面の表示地域を異ならせることができ、ユーザは所望の地域を両画面を利用して、見ることができる。なお、「追動」、「独立」などのスイッチを設けておき、これをタッチした場合には、この指示を優先することも好適である。

【0049】

【発明の効果】以上説明したように、本発明によれば、複数の言語に対して、ユーザの要求に従った言語での表示や音声出力が行える。

【図面の簡単な説明】

【図1】 実施形態の装置の全体構成を示すブロック図である。

【図2】 動作及び表示を示す図である。

【図3】 複数言語併記の表示例を示す図である。

【図4】 表示と案内音声の言語が異なる場合の例を示す図である。

【図5】 国境を越えた場合の表示と音声の変更の例を示す図である。

【図6】 地図名称のデータ構造を示す図である。

【図7】 文字の表示及び読みのデータ構造を示す図である。

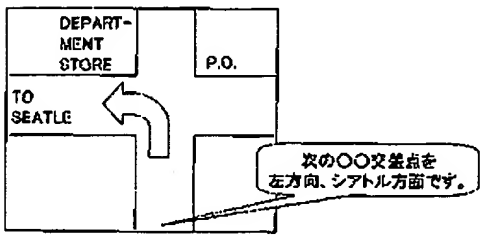
【図8】 国・言語の関係を示す図である。

【図9】 分割画面表示の例を示す図である。

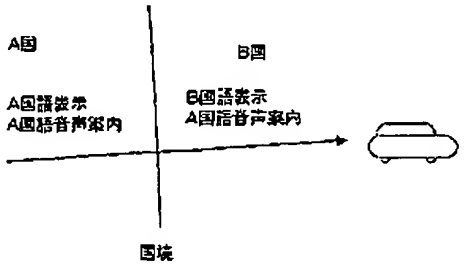
【符号の説明】

10 地図データベース、12 表示データ記憶部、14 音声データ記憶部、16 GPS装置、18 ナビゲーションECU、20 表示制御部、22表示部、24 操作部、26 音声出力制御装置、28 スピーカ。

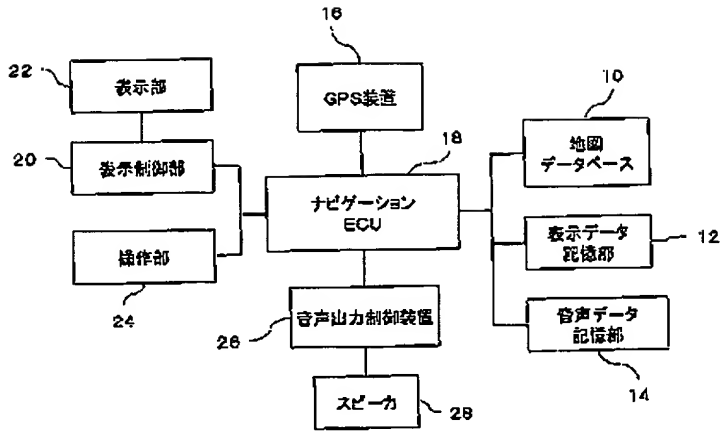
【図4】



【図5】

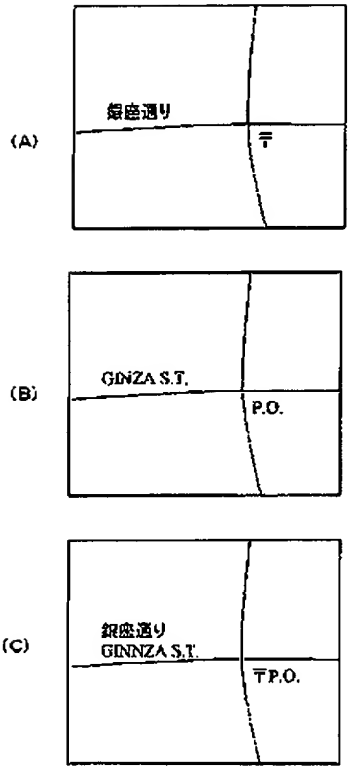


【図1】

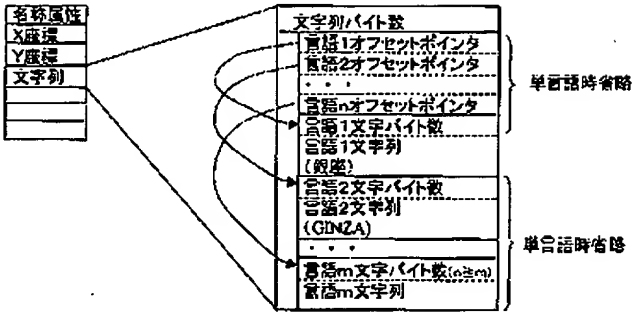


実施形態の構成

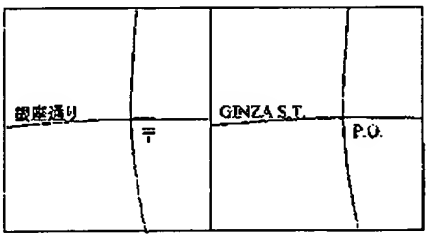
【図3】



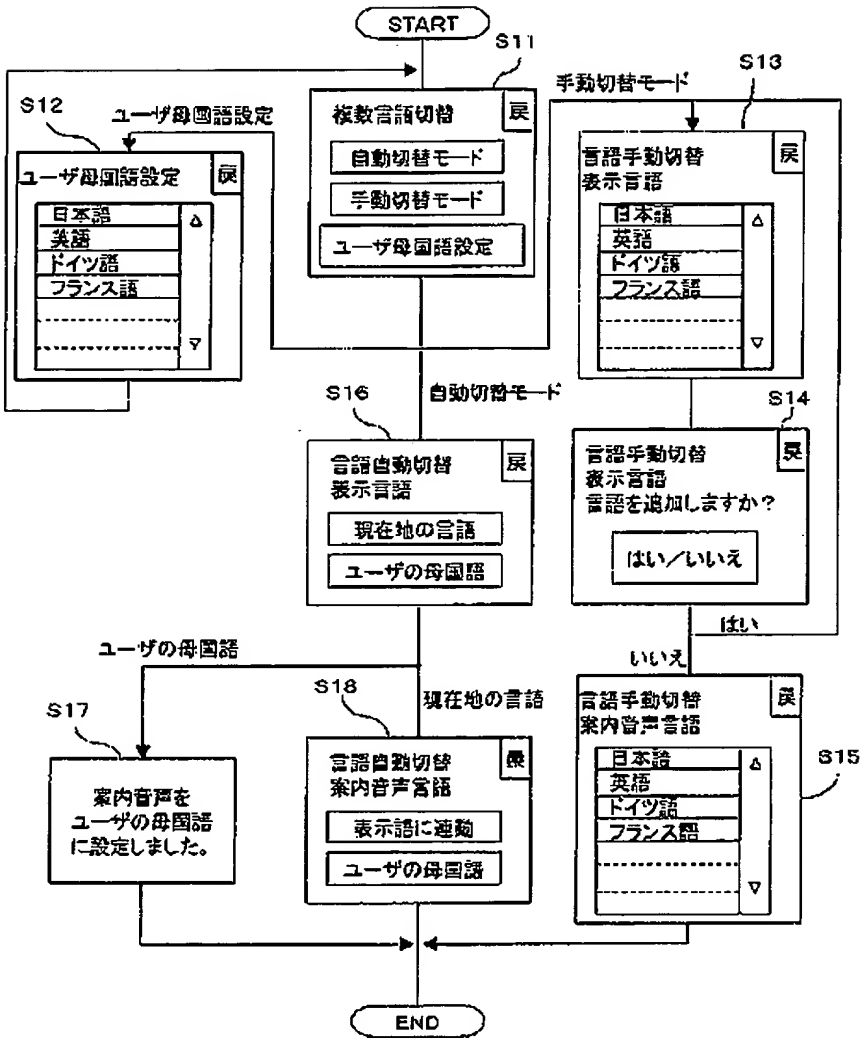
【図6】



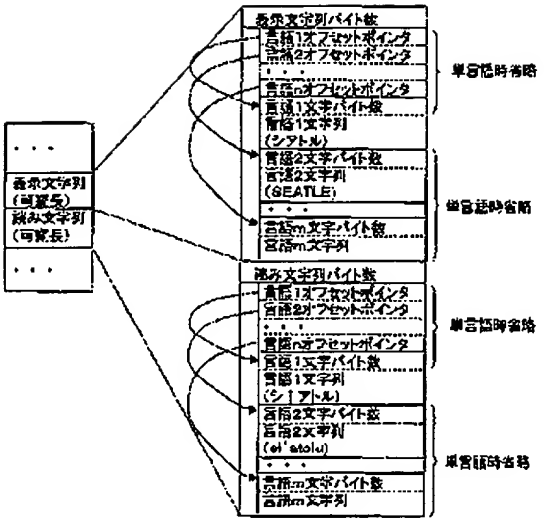
【図9】



【図2】


START
S11
複数言語切替
戻
自動切替モード
手動切替モード
ユーザ母国語設定
S12
ユーザ母国語設定
ユーザ母国語設定
戻
日本語
英語
ドイツ語
フランス語
手動切替モード
S13
言語手動切替
表示言語
戻
日本語
英語
ドイツ語
フランス語
自動切替モード
S16
言語自動切替
表示言語
戻
現在地の言語
ユーザの母国語
S14
言語手動切替
表示言語
言語を追加しますか？
戻
はい／いいえ
はい
いいえ
ユーザの母国語
S17
案内音声を
ユーザの母国語
に設定しました。
S18
現在地の言語
言語自動切替
案内音声言語
戻
表示語に連動
ユーザの母国語
言語手動切替
案内音声言語
戻
日本語
英語
ドイツ語
フランス語
S15
END

【図７】



【図８】

国・言語テーブル

日本	日本語
米国	英語
英国	英語
カナダ	英語 フランス語
スイス	フランス語 ドイツ語 イタリア語
・ ・ ・ ・	・ ・ ・ ・